0027

May 6, 2003

TO: Internal File

THRU: Peter Hess, Environmental Scientist III/Engineering, Team Lead

FROM: Priscilla W. Burton, Environmental Scientist III/Soils

RE: Methane Degas, Canyon Fuel Company, LLC., Dugout Canyon Mine, C/007/039-03B

SUMMARY:

The submittal was received on March 7, 2003. The Dugout Mine requires two ventilation boreholes for the Rock Canyon seam to reduce methane along the longwall panel. The two degas drill holes (MW-06 and MW-08) are in T 13 S, R 12 E, Sections 15 and 16, as shown on Figure 1-1. And on the Pine Canyon Quadrangle map. The wells will add 2.41 acres to the permit area (Table 1-2), of which 1.14 acres is already disturbed by an existing access road. The application indicates in Table 2-3 and section 242.100 that topsoil will be replaced to a depth of twelve inches or greater over the two sites, except on the reconstruction of pre-existing road surfaces.

The soils to be disturbed were not analyzed during the topsoil survey. The Permittee has committed to sampling and analysis of the salvaged topsoil from both MW-06 and MW-08 for the following parameters immediately after soil salvage: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus (Section 243).

Recommendation for approval of this submittal is based upon changes in the narrative that were faxed to the Division's Salt Lake Office between April 21 and 30, 2003. The approval of this submittal should, therefore, be conditional upon receipt of clean copies of the application with a new C1/C2 form.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

Analysis:

Baseline soils information (Attachment 2-1) was compiled by Mr. Dan Larsen (Soil Scientist) with EIS Environmental and Engineering Consulting. Mr. Larsen's resume is attached with the report.

Findings

The information accompanying the soil resource report is adequate for the reporting of technical data requirements of the regulations.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

The borehole is located in the Book Cliffs between Dugout and Soldier Canyon Mines at an elevation of 8,000 feet. The UTM coordinates are T. 13 S., R. 12 E., SE1/4 SE1/4 NE1/4 of Section 16 (site MW-06) and SW1/4 SW1/4 of NE1/4 Section 15 (site MW-08) as shown in Figure 1-1.

The disturbed area of MW-06 will be approximately one acre. The disturbed area of MW-08 will be approximately 1.41 acres. Existing roads may be graded, but not enlarged as a result of this disturbance.

Pine Canyon Utah USGS quadrangle map also shows the location. From the Quad map, one can see that the site is on a narrow ridge, above a small drainage contributing to Fish Creek. The soil survey indicates that the northwest slopes of the ridge supports Douglas fir and the southwest slopes support Ponderosa pine.

Findings:

The information provided meets the minimum requirements of the Environmental Resource Information.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The MW-06 site is at an elevation of 7,860 feet and the MW-08 site is at an elevation of 8,520 feet.

The application indicates on page 7-3 that climatological information can be found in Appendix 4-1 of the MRP behind the air quality permit.

Climatological information for the higher elevations of the mine permit area is found on pages A4-2-1 through A4-2-9 in Climatological Information, Appendix 4-1 of the MRP. Figure 3 (page A-2-4-6) is an isopleth of the mean annual precipitation for central Utah, showing the locations of the well sites receiving approximately 12 inches precipitation annually. The source of this information is the USGS. This conflicts with the soil survey information (Attachment 2-1) where annual precipitation of 16-20 inches is described for the soil types at the two sites.

Figure 4 graphically summarizes the seasonal precipitation for the years 1958 to 1965 from the Sunnyside weather station. During the months of December through March, one might expect six to ten inches of snow at the sites. Between ¾ and 1 inch of rainfall occurs during each of the months February to September. If the precipitation at these sites were patterned after that of Sunnyside, fall seeding would be ideal.

Findings

The information provided adequately addresses the minimum requirements of the climatological information section of the regulations.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Attachment 2-1 Topsoil Evaluation for Methane Degas Wells Dugout Canyon Mine Carbon County Utah, May 20, 2002 indicates that the soils in the vicinity of MW-06 were classified in the, Midfork-Comodore Complex. According to the information provided in Attachment 2-1 the Midfork-Comodore Complex includes Midfork family bouldery loam and Comodore bouldery loam on the slopes and 30% other soils. In Midfork and Commodore loam soils, the surface soil has a layer of partially decomposed twigs, leaves, and needles between one or two inches thick covering a brown bouldery loam (topsoil) layer about six inches thick. Effective rooting depth of Commodore soils is 20 inches. Effective rooting depth of Midfork soils is 60 inches. The potential plant community in this unit is Douglas-fir canopy of 90%, and understory including 10% grasses, 5% forbs, and 85% shrubs. The important plants are sedge, mountainlover, and snowberry.

Mr. Larson investigated the MW-06 site in May of 2002 and found the site to be previously disturbed by logging as shown in his sketch. Mr. Larsen's designation of north on the sketch does not agree with the Permittee's designation on other figures of the site. A road bisects the site and the Division attempted to orient Mr. Larsen's sketch with the other figures for the site, by this road. (However, during a conversation on April 24, 2003, Mr. Gary Taylor indicated that the Permittee's location of the road on Figure 5-8 was probably in error and Mr. Larsen's sketch was the more accurate. Therefore, the Permittee drew the intended orientation of the site onto a copy of Mr. Larsen's sketch and faxed it to the Division on April 24, 2003.) The site formerly hosted a logging operation and has 6-9 inches of mixed previously disturbed soils available for salvage over most of the site. East of the road, there is a pocket of the site having 10-14 inches of topsoil.

The soil of MW-08 is identified as Beje-Trag complex, 3-30% slopes. According to the 1988 Carbon County Soil Conservation Service Soil Survey information for Map Unit 7, the location of this drill well on the ridge would indicate that it is Beje loam or Doney family soil. The Beje loam is a shallow soil with a six-inch surface layer and a fourteen-inch subsoil layer over calcareous sandstone. The effective rooting depth is twenty inches. The potential plant community on the Beje soil is 60 percent grasses, 15 percent forbs, and 25 percent shrubs. Important plants are Salina wildrye, mountain big sagebrush, bluegrass, and slender wheatgrass.

Mr. Larsen investigated the MW-08 in May 2002. Mr. Larsen's designation of north on the sketch does not agree with the Permittee's designation on other figures of MW-08. (During a conversation on April 24, 2003, Mr. Gary Taylor indicated that the Permittee's location of the

road on Figure 5-8 was probably in error and Mr. Larsen's sketch was the more accurate.) A road transects the study area and the Division oriented Mr. Larsen's sketch with the other figures for MW-08, by this road. His sketch of the site indicates that there is 10 – 25 inches of topsoil available for salvage on the north side of the road.

Soils were not analyzed during the topsoil survey. The application indicates that the salvaged topsoil from MW-06 and MW-08 will be analyzed for the following parameters immediately after soil salvage: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus (Section 243).

Findings:

The information provided meets the minimum requirements for Soils Environmental Resource Information. The Permittee has committed to sampling and analysis of the salvaged topsoil from both MW-06 and MW-08 for the following parameters immediately after soil salvage: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus (Section 243).

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

Alluvial Valley Floor Determination

The two sites are at elevations of 7,860 feet on a steep slope and 8,520 feet on a ridge above a drainage. The site is in the North Horn formation. Alluvial sediments deposited by Dugout and Fish Creek drainages are far below the site as shown on Plate 6-1.

Findings:

The Division finds that the site is not located in an alluvial valley floor.

PRIME FARMLAND

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

Analysis:

Prime farmland does not exist at this elevation in the Book Cliffs. The growing season is short (60 days) and there is no developed water source. The Utah Agricultural Experiment Station Research Report Number 76 entitled "Important Farmlands of Parts of Carbon, Emery, Grand, and Sevier Counties" does not include R 12 E, T 13 S.

Regulation R645-302-313 requires that a reconnaissance inspection is done for all permit applications whether or not Prime Farmland is present and that the Division and Natural Resource Conservation Service will determine the extent of the reconnaissance inspection. On April 24, 2003, the Division consulted with Gary Roeder, Area Conservationist with the NRCS Price Field Office concerning this well location. Mr. Roeder also concluded that the site does not fit the parameters of prime farmland.

Findings

The information provided is adequate for the purposes of the Regulations.

OPERATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Topsoil Removal and Storage

Figure 5-8 and Figure 5-9 illustrate the disturbed area of the two wells. Plates 5-1 and 5-2 are the corresponding cross section for each well site. The drilling layouts for the two sites are shown in Figures 5-1 and 5-2. The operational layouts are shown in Figures 5-3 and 5-4.

Approximate dimensions of the MW-06 site are 255 ft x 175 ft or 44,625 sq ft (Fig 5-1). For MW-06, Plate 5-1 cross section A-A' shows a thirty foot cut slope and the need for up to twenty feet of fill. It is expected that this site will generate 1,387cu yds of material (37,449 cu ft) (Table 2-1). This is an average of twelve inches topsoil salvaged from the site. The soils consultant indicates that there is between six and fourteen inches of topsoil available at this site (Attachment 2-1). The Permittee's estimate of soil salvage is reasonable for MW-08.

Approximate dimensions of the MW-08 site are 370 ft x 165 ft or 61,050 sq ft (Fig 5-1). For MW-08, Plate 5-2 cross section A-A' shows a thirteen foot cut slope and the need for ten feet of fill. It is expected that this site will generate 2,967 cu yds of material (80,109 cu ft) (Table 2-1). This is an average of fifteen inches topsoil salvaged from the site. The soil's consultant indicates that there is very thick topsoil north of the road, between ten and twenty-five inches of topsoil are available at this site (Attachment 2-1). The Permittee's estimate of soil salvage is reasonable for MW-08.

Vegetation will be removed and stored on the perimeter for use in reclamation (Section 232.600).

A qualified person will supervise the soil salvage operations (Section 231.100). Steepness of grade has not been cited as a limitation to topsoil salvage at these sites (Section 232.700). A dozer or front-end loader will be used for topsoil removal (Section 232.100). The stockpile dimensions for each site are outlined in Table 2-2. A berm or silt fence will be constructed around the stockpile and the stockpile will be roughened and seeded with the mix described in Table 3-2 (Section 231.100 and 234.200).

A commitment in Section 243 of the application indicates that after salvage, the soils of MW-06 and MW-08 will be analyzed for the following parameters: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus.

Findings:

The information provided meets the minimum requirements of the Operation Plan, Topsoil and Subsoil removal.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Acid- and Toxic-Forming Materials and Underground Development Waste

The well design is shown on Figure 5-6. The well will be drilled to a depth of over 2,000 feet and will encounter various strata of rock. Fragments of this rock will be brought to the surface with the drilling slurry. The drilling slurry in the mud pit will be sampled for acid/toxic forming characteristics as described in Table 6 of the Division's Topsoil and Overburden

Guidelines (Section 542.400). Acid/toxic forming material will be covered with four feet of non-acid/toxic forming soil.

Findings:

The information provided is adequate for the purposes of the Regulations.

RECLAMATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Redistribution

The reclamation timetable is shown on Figure 5-7. The first phase of reclamation will occur immediately after drilling and reduce the operational area to one quarter of the disturbed area. The remaining area will be graded, topsoiled, roughened, seeded, and mulched. A small storage pile of topsoil will remain for use on reclamation of the operational area. See Figures 5-3 and 5-4.

The incised mud pit will be allowed to dry and fill with soil that will be compacted to minimize settling (Section 542.500). The plan indicates there will be mixing of the cover material with the clays of the mud pit to avoid creating an abrupt boundary between the layers (Section 242.100, page 2-9). The entire site will be ripped to a depth of eighteen to twenty four inches (Section 242.100 and 341.200) to reduce compaction.

Topsoil will be re-spread using a trackhoe. The soils will be handled when loose and friable (not too wet, not too dry), see Section 242.100. Redistribution thickness is shown in Table 2-3.

The soils of MW-06 and MW-08 will be analyzed for the following parameters: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus (Section 243) to determine if amendments are needed.

Findings:

The information provided meets the minimum requirements of the Reclamation Topsoil Redistribution Regulations.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General

The reclamation timetable is shown on Figure 5-7. The first phase of reclamation will occur immediately after drilling and reduce the operational area to one quarter of the disturbed area. The remaining area will be graded, topsoiled, roughened, seeded, and mulched. A small storage pile of topsoil will remain for use on reclamation of the operational area. See Figures 5-3 and 5-4. The mud pit and other areas of the site will be reclaimed in the same season as the well is drilled. A radius of 20 feet around the well casing will be kept clear of vegetation (Section 529). A road through the MW-06 site and a road cut will remain (Figure 5-3).

The concept of immediately stabilizing the site is sound.

The site will be fully reclaimed upon cessation of methane venting (Section 541).

Findings:

The information provided is adequate for the purposes of the regulations.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

The area will be ripped to a depth of 18 – 24 inches (Section 242.100).

Erosion control measures will include silt fences, berms, seeding, and mulching of the soils (Section 231.100). Disruptive gullies (greater than nine inches) will be reseeded (244.300). Surfaces will be left rough. Mulch will be applied at 2,000 lbs/ac with a tackifier Section 341.200).

The Permittee should contemplate the addition of mulch generated from the grubbing of vegetation. This would be an inexpensive method of adding surface protection.

Findings:

The information provided is adequate for the purposes of the regulations.

RECOMMENDATIONS:

The Permittee has described salvage and replacement of topsoil. The calculations for topsoil salvage are supported by the soil consultant's report for MW-06. The Permittee should contemplate the addition of mulch generated from the grubbing of vegetation. This would be an inexpensive method of adding surface protection. The proposal is recommended for approval.

Recommendation for approval of this submittal is based upon changes in the narrative that were faxed to the Division's Salt Lake Office between April 21 and 30, 2003. The approval of this submittal should therefore be conditional upon receipt of clean copies of the application with a new C1/C2 form.

The Permittee has committed to sampling and analysis of the salvaged topsoil from both MW-06 and MW-08 for the following parameters immediately after soil salvage: pH, Electrical Conductivity, Sodium Adsorption Ratio, percent $CaCO_3$, plant available Nitrogen, Potassium, and Phosphorus (Section 243). The information gained from this analysis should be placed in the MRP.